Pike in Your Waters

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Compiled from original material by:
Dr. B. Broughton B.Sc. (Hons), Ph.D., F.I.F.M.
Prof. B. Rickards B.Sc., M.A., Ph.D., Sc.D, D.Sc, C.Geol., F.G.S.
N. Fickling B.Sc. (Hons), M.Phil, I.F.M. Dip.
D. Lumb B.A. (Hons)
C. Leibbrandt

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1. Introduction

This publication has been compiled using most of the authoritative scientific evidence available today. As you might expect it is intended to promote the presence of pike in fisheries, but not at the expense of good sport for other anglers, or at a financial cost to fishery managers and owners. Quite the contrary: it will show that the presence and survival of good pike stocks are not only vital to maintain healthy fisheries but can also have significant cost benefits. Pike anglers are not so blinkered that they cannot realise that good pike fishing depends upon healthily balanced ecosystems, which benefit all anglers equally in the long term.

There are certain truisms that The Pike Anglers' Club of Great Britain (PAC) has been explaining and advising upon since the Club's inception in 1977. These relate to the way in which perceived pike problems are compounded and not alleviated by the usual methods of dealing with them - i.e. culls. There is a wealth of scientific information to illustrate that culling pike can be counterproductive which we shall discuss in detail later, but there are other reasons for conserving pike stocks, which is where we will start. First of all, we need to look at the root of the problem by examining the place that pike occupies in the minds of some anglers.

2. The Truth About Pike

Pike are an indigenous species in Britain and have been living in balance with their food fish for as long as they have been present, at least 25 million years. Far from being the malevolent monster of popular mythology, pike are not killing machines. They certainly do not over-predate their food fish. If they did they would soon find themselves starving to death. In fact you might be surprised how small the dietary requirements of pike actually are.

Pike get little credit for the essential work they do in regulating the balance of fish populations in fisheries. These are the fish that scavenge older prey fish that become diseased and die. It is also true that pike do not solely prey on other species of fish; they also feed on their own young, and for this reason they can happily exist in waters which contain pike only. Where there is a choice, pike will rarely feed on one species exclusively. Given that the pike also prey on any other form of aquatic life that becomes available – birds, rodents, amphibians, etc. – the weight of food which a pike consumes in a year is modest.

'Pike problems' often get brought to the attention of fishery managers when anglers complain of pike seizing fish as they are being played to the bank. This often occurs a number of times to one angler in one swim. He may be forgiven for thinking that there is a pack of ravenous pike in that swim. It is more likely that just one pike is responsible. A fish being played to the bank - especially if it 'splashes' as this happens - is more attractive to a pike than one swimming naturally. If the pike fails to get a meal on the first attack, it will return for another attempt, and again, until it is successful. Anglers who report a 'swim full of pike on a feeding frenzy' are, in all probability, seeing one pike trying to get a meal that keeps getting dragged away from it.

It is also true that pike are more active in the warmer months, as are a greater number of anglers, so it is hardly surprising that most 'pike problems' are reported at this time of year. A genuine 'pike problem' is almost certainly a symptom of a much more serious fishery management malaise.

Population dynamics are poorly understood and it is often fish stocking policies, rather than predation by pike, which disrupt the 'balance of nature'. Before deciding that you have a 'pike problem' from anecdotal evidence, it is wise to have the true pike population, and its balance with prey species, assessed professionally.

3. A Sporting Fish

There is no doubt that the interest in pike fishing has been growing steadily since the 1970s. As the number of pike anglers increases so does demand for good pike fishing. Pike anglers are increasingly prepared to pay for good quality pike fishing. They demand fisheries where pike are expected to be treated with care and, most importantly, returned alive to the water. Pike anglers will not fish waters where pike, especially big ones, are expected to be killed.

While pike can be caught throughout the year where there is no close season, they are one of the few species which are targeted predominantly in the autumn and winter months - especially in stillwaters. Many fisheries see a downturn in angler numbers in the colder months, yet by creating good pike fishing they would attract pike anglers right through the winter.

The PAC believes that the presence of pike in suitable fisheries can produce well-balanced, mixed sport where anglers and owners feel the benefits all year round - and in the long term.

4. Pike in Mixed Fisheries

Quite clearly, where there is only one species of fish in a water (some man-made trout and carp fisheries are managed in this way), the presence of the pike is undesirable. In most other waters, both large and small, still and running, the removal of pike in terms of both ecology and finance is a very dubious activity indeed.

i. The Scientific Argument

It has been demonstrated in a number of scientific studies that the removal of large pike is not the best management policy where pike are perceived to be a problem in a fishery. It has been shown that the removal of these fish results in no decrease in pike biomass because the reduced pike-on-pike predation increases the survival rates of the smaller individuals. The average size of the pike is reduced but the numbers of individuals rises - often dramatically. Ironically, this leads to an increase in the number of pike being seen by anglers and a 'pike problem' has been created where it may not actually have existed previously. A detailed appraisal of how pike culling can be counterproductive is to be found in the *Supporting Evidence* section of this publication.

ii. The Economic Argument

For pike culling to have any impact it has to be carried out rigourously and, more importantly, continuously. It has been suggested that 30% (or more) of the pike population must be removed annually for the removal to be effective. The financial costs involved in this kind of operation are considerable. Indeed, the economic benefits of retaining the pike as an angling resource should be considered and weighed against the costs of attempting to eradicate them before embarking on a pike removal exercise.

iii. Coarse Fisheries

On mixed coarse fisheries angler numbers often decline after the first frosts. If good pike fishing can be enjoyed on a fishery pike anglers will be attracted at a time when angler numbers would otherwise fall. Clubs and commercial fisheries can both benefit from the increased revenue generated by encouraging pike and pike anglers. This additional income could be used to manage the fishery in a way that increases productivity and amenity for all anglers visiting the venue.

iv. Managed Trout Fisheries

Thanks to the efforts of the PAC and leading pike anglers, there are now numerous examples which can be cited where allowing limited pike fishing on managed trout fisheries has provided additional valuable income at a time when trout fishing has either ceased for a close season, or when angler numbers have fallen in the winter. Pike angler generated income from tickets, bait sales and boat hire, and money saved on manpower and materials by ceasing netting operations has been used both to offset the loss of trout to pike predation by additional stocking and also to improve the facilities at fisheries. Improving facilities can attract more trout anglers, thereby further increasing revenue for stocking.

It can be seen to make sound economic (as well as ecological) sense to seriously investigate this option. In this way both trout anglers and pike anglers are afforded the privilege of fishing some of the country's most prolific and scenic waters, to both parties' mutual benefit.

v. Natural Fisheries

What could be termed 'wild' fisheries may not always provide direct income from pike anglers (although there are examples where fishing permit sales are a source of revenue). However, visiting pike anglers - who may stay for a week or more - can be responsible for generating income for the local economy. Where waters are left to their own devices as far as stock levels are concerned it is wise not to attempt to 'improve' the situation for one species over another. Upsetting the pike population will have knock on effects on the populations of other species, and if the pike numbers are significantly reduced smaller predatory fish species (e.g. perch) whose numbers were controlled by the pike, may increase in numbers, with unforeseen ecological implications.

5. Alternatives to Pike Removal

The word 'conservation' when used in the context of fisheries management can be defined as: "The management of a resource in order to make best possible use of that resource". All fisheries benefit from sensible management, which will make the difference between improvement and decline.

Should the survival of prey species be of paramount importance, then action should be taken to improve fish handling, unhooking and retention, factors which often produce fish mortalities. In order to increase the numbers of non-predatory fish present in a water, effort should be expended on increasing water fertility, habitat diversity and improving fish welfare rather than on haphazard pike removal.

On all types of mixed fishery there are alternatives to pike removal.

1. Allow the fishery to regain and maintain a natural balance by cessation of pike removals. This, in itself, will create financial savings from reduced fish stock damage due to the decreased predation arising from the natural reduction in pike numbers and pike-on-pike predation.

2. Re-assess the stocking policy of the fishery. The money saved from removal efforts could pay for more fish to be stocked.

3. Introduce angling rules and fishery development practices which improve survival of non-predatory species.

4. Seriously consider the case for pike angling on the fishery. In trout reservoirs, in particular, there is no reason why a small number of pike anglers would not pay well for the right to fish.

5. Allow pike angling on the fishery, but, if it is absolutely necessary to remove pike, take out only the small ones below 4lbs or so. This, however, may also cause problems as big pike eat small pike and their removal may increase predation on other species.

6. Specialist Pike Fisheries

As demand for pike fishing has grown so the creation of fisheries specifically aimed at pike anglers has become a commercial possibility. Such a project must not be entered into without careful consideration for the future of the pike. Simply stocking large pike into a fishery (which is what will attract the most anglers) is unlikely to produce a fishery which is viable in the long term. It is well known that large (20lb plus) pike which are transferred from one fishery to another are generally unable to maintain their condition without careful fishery management.

The creation of a specialist pike fishery should be looked on as a long term project if it is to provide high quality, sustainable pike fishing - and long term income. The introduction of food to supplement that which is naturally available in the fishery should be strongly considered. This can take the form of live or dead fish. Professional advice should always be sought before transferring pike between fisheries.

7. Sustainable Pike Fishing

Pike in mixed fisheries need to be treated carefully if the standard of fishing available is to remain good enough to attract sufficient anglers. Pike are not as hardy as some other large growing species (carp or catfish, for example), and they require careful handling.

Large pike are a scarce resource and not quickly replaced through natural recruitment, on which almost all waters rely. There are also far fewer pike in any given water than reported captures might indicate. An individual fish can be captured a number of times each year, and if handled and returned correctly it will survive this process for many years while continuing to grow. On all waters that allow pike fishing there are guidelines which should be laid out in order to minimise the accidental harm that can befall pike through no conscious intention of the anglers.

A few simple additions to a fishery's rules will ensure that good quality pike fishing can be maintained indefinitely. For example:

- All pike anglers to use wire traces - minimum 30lb breaking strain.
- Minimum line strength of 15lb.
- Pike anglers must be in possession of a large knotless landing net (minimum 36 inch triangular frame or 30 inch diameter round frame), unhooking mat and strong forceps.
- No pike to be retained for longer than necessary to set up camera equipment (if a fish is to be photographed).
- All pike to be returned to the water as quickly as possible, alive and in good condition.

If a trout fishery is to attract pike anglers over a prolonged number of years it must continuously produce pike of a sufficiently large size to justify the ticket price. Limiting access to the water appears to be the best way to ensure this happens. There is anecdotal evidence to suggest that pike in trout fisheries are more susceptible to mishandling than pike in natural fisheries. This is an aspect of pike conservation deserving of detailed study.

A few trout waters allow pike anglers access for most, or all of the winter period, and it is noticeable that while they continue to produce large pike, they do not produce them in the numbers that they did when pike

fishing was first allowed. While they may still be capable of producing occasional really large sized pike, such fish are captured much less frequently. The presence of significant numbers of large pike in a fishery offers the best chance of high returns from pike angling income.

Pike catch rates have also been noted to drop as the season progresses on trout fisheries which remain open for prolonged periods, even as short as a week. Demand for places on the first day a fishery is open for pike fishing are many times higher than for even the fifth day, let alone the fifth week. Maintaining angler interest in a venue is dependant upon consistent catch returns for an angler's time and money expended. Short periods of pike angler access with lengthy periods between them appear to result in consistent pike catch returns over a prolonged period of time.

In rare and extreme situations in trout fisheries pike stocks may need management. Removal and transfer of small to mid-size pike will sufficiently reduce the biomass of pike in the fishery to restore the original balance, while ensuring the transferred pike their best chances of survival in their new home and leaving large pike to attract pike anglers to the trout fishery. However, each trout fishery is different and expert advice must always be taken in order to obtain the best results.

8. Re-Stocking

As has been mentioned previously pike must be re-homed with great care and careful planning for their future well-being. If a pike population is reduced by pollution or disease it is better to restock with a moderate number of small to medium sized pike (under 20lb) in order to give them a better chance of survival and growth. More pike can always be stocked at a later date if necessary.

9. The Future

The Pike Anglers' Club of Great Britain has, of course, a vested interest in the positive management of pike as an angling resource. We have a serious commitment to improving the status of pike, which can be summed up in our Mission Statement...

> "The Pike Anglers' Club of Great Britain will work to establish an environment in which pike are valued, both as a sporting fish and a necessary part of the management and ecology of fresh waters."

As the number of pike anglers seeking good quality pike fisheries has never been higher, and continues to increase, the need for widespread positive pike management has never been greater. By implementing such fishery management practices on your waters, both the pike and your fishery can benefit.

The Pike Anglers' Club is always available to give guidance and assistance on any pike related matter.

10. Supporting Evidence

i. Dietary Requirements

The dietary requirements of pike are predictable and have been studied by several authors (e.g. Kipling & Frost 1970). In general terms, a diet comprising between 13oz-1lb of prey fish per pound of pike per annum is needed to merely keep the pike alive (the 'maintenance ration'): Johnson (1966) lists an average figure equivalent to 1.4lb/lb/year, with a range of 1.3-1.8, whereas Mann (1982) reports an annual value of 0.8/g/g.

(Note, however, that there is a positive correlation between food consumed and increasing temperature, and higher values have been recorded for pike kept under unnaturally-warm experimental conditions.)

Where pike are undergoing normal growth, 2-3.5lb of prey fish per pound of pike per annum is a common ration. For example, in his study of the Middle Level drainage system, Kell (1985) calculated that the annual consumption of prey fish by pike was 254 per cent of their body weight; and Popova (1978) cites studies which revealed figures of 341-344 per cent in the Volga delta and 270-340 per cent in Rybinsk Reservoir.

Conversion from prey flesh to pike flesh can also be predicted, and the ratio between weight gain and total food consumed during normal growth is often between 1:5 and 1:10. Popova (1978) lists a figure of 1:8.8 and Mann (1982) calculated a ratio of 1:6.6.

ii. Prey Preferences

The selection of prey by pike has been the subject of numerous studies. Some authors have noted that as pike grow larger, they eat larger prey (e.g. Diana 1979), although small prey are still consumed; other authors (e.g. Willemsen 1967) have concluded that it is the relative abundance of prey species which determines the diet of pike. Popova (1967) concluded that prey choice appeared to be governed solely by its

availability to pike.

If offered a choice of prey species, there is some evidence that pike may select soft-rayed species in preference to fish bearing spines (Mauck & Coble 1971). However, other authors report that spined fish - usually perch or related species - are the dominant prey of pike (see Johnson 1966, Diana 1979). Flickinger & Clarke (1978) reported heavy predation by newly introduced pike on bluegills (a spined species), whereas there was no change in the numbers of carp and black crappies (soft-rayed and spined species respectively). In Llandegfedd Reservoir, South Wales, analyses of the stomach contents of large pike revealed substantial numbers of perch and relatively few trout (Welsh Water Authority, unpublished data).

That pike tend to be opportunist, rather than selective piscivores is supported by the fact that the stomach contents listed by Frost (1954) and Mann (1982) comprised nearly the entire range of fish species at both studied sites, Lake Windermere and the River Frome. Seasonal changes in the diet of pike do take place in response to the availability of prey (described by Lawler 1965 and many other authors). However, the scientific literature does not support the notion that pike will always 'prefer' a particular prey species - irrespective of its abundance - an allegation often levelled at pike in salmonid fisheries.

The extent of intraspecific (pike-on-pike) predation has been noted by many authors (e.g. Toner & Lawler 1969, Pitcher 1980). Toner (1969) revealed results which showed that small pike formed 25 to 32 % of the food of other, larger pike. This has particularly important consequences for the survival of pike during their juvenile stages. Bry & Gillet (1980) report figures of 79 per cent losses of young pike through cannibalism; and Wright & Giles (1987) discovered that pike fry contributed 27.3 per cent of the number of fish in the diet of small pike kept in experimental ponds.

Large pike represent the only natural piscivorous predator of smaller pike and their presence will help to keep the number of small pike in check.

iii. Spawning Success

Kell (1985) concluded that recruitment to the pike population is largely determined by survival of the younger stages in the life cycle, rather than the number of parents or the quantity of spawn which is shed, with predation and starvation being the prime causes of larval mortality. Clepper (1975) also failed to identify any correlation between the size of the spawning stock and subsequent year-class strength for a variety of predatory fish, including pike.

iv. Natural Balance

The data from numerous sources demonstrate that on stable fisheries there is a weight-to-weight relationship between predatory fish and the prey which are available to them. This finding is in direct agreement with the original assertion of Johnson (1949) and the detailed pond experiments conducted by Swingle (1950). The studies on the status of the ponds, either balanced or unbalanced, revealed that the predator/prey ratio, by weight, of balanced ponds was between 1:1.4 to 1:10. The studies showed that 77% of the best ‘balanced’ populations had ratios between 1:1.3 and 1:1.6.

Conversely ‘unbalanced’ populations had ratios of between 1:0.06 and 1:63. Most unbalanced populations had a relatively small weight of predators in relation to the weight of prey. It appears that the weight of prey present is a function of the fertility of the water, whereas the weight of predators is, within limits, dependent on the weight of prey.

Since the results of these studies were published it has been confirmed that in most established fisheries in Britain, the ratio, by weight, between pike and their prey is approximately 1:10. This has been determined from the results of hundreds of counts of fish following the complete de-watering of fisheries or total fish mortalities and the findings have been confirmed by fish population studies using seine nets, electro fishing, traps etc.

In his review of a large quantity of data derived from eastern European predator fisheries, Popova (1967) cites pike biomasses of 10-13 per cent of that of their available prey; Kell (1985) lists survey data for the Sixteen Foot drain which give a relationship of 12 per cent; and Templeton (1995) recommends that pike fisheries should be stocked with prey fish at a weight of eight times that of the pike. When Broughton (unpublished data) analysed the catch statistics from several hundred scientific surveys of still and running water fisheries in the English Midlands, an average weight ratio between pike and their available prey was found to be approximately 1:10.

Using the ratio of 1:10, one can predict that 300lb of prey fish would be able to support some 30lb of pike without any long-term, adverse effects on the abundance of either type of fish. A useful analogy is to

imagine that the prey fish represent a sum of money which is invested. In effect, pike are consuming the interest, leaving the capital sum untouched.

This balance is a so-called dynamic equilibrium - in other words, it will swing one way or another in response to entirely natural phenomena (such as spawning success or outbreaks of disease). Equally, if the balance swings markedly in favour of one 'side', ecological pressures ensure that eventually it will swing back in the other direction (described in detail by Carlander 1958 and Anderson & Weithman 1978).

If this were not the case, there would be countless examples of fisheries in which pike have become dominant or have totally eradicated the stocks of prey fish, and this would be a continuing situation on unmanaged waters. We have reviewed a huge volume of the published scientific literature on pike in the British Isles, Europe, North America and elsewhere, and there appears to be just one example where pike had 'eaten themselves out of house and home' (Munro 1957).

Ricker (1952) described three types of numerical relationships between predatory fish and their prey. Mann (1982), Kell (1985) and other authors have concluded that pike probably fall into Ricker's Type B model, in which: "Predators at any given abundance take a fixed fraction of prey species present, as though there were captures at random encounters". This means that predation is dependant on the numbers of prey, rather than the numbers of predators.

Because of the annual production of fish flesh within a fishery as a result of spawning and growth, there is little danger of pike consuming a large percentage of the potential prey fish. They will, in fact, consume some of the surplus fish flesh produced each year, ensuring that the weight of both predators and prey remains in balance.

11. General Comments On Management Principles

There are a wide variety of physical, chemical and biological factors which influence fish populations in exploited fisheries.

Where both predators and prey are present, factors which increase fish numbers include:

- immigration
- natural recruitment (successful spawning)
- stocking, be it planned, accidental or illegal.

Factors which decrease fish numbers include:

- emigration
- pollution
- disease and parasitism
- 'natural' mortalities
- predation - by the same species, other fish, other animals or birds
- removals, either deliberate (cropping/culling) or theft
- angling, through deliberate or accidental actions.

In assessing the reason(s) for changes in the status or composition of fish populations, it is important that each of these factors is considered. All too often, those charged with managing fisheries draw cause-and-effect conclusions based on prejudice, hearsay or inadequate data. Historically, the persecution of pike in British fisheries was a case in point, based on the fallacious notion that if left to their own devices, the pike would eat all of the other species to extinction.

With improved knowledge and its wider dissemination to anglers, attitudes have changed rapidly in the last few decades. It is fair to state that the far greater protection afforded to pike has not been accompanied by a decline in the quality of fishing for non-pike species.

Were this not the case, there would undoubtedly be a substantial groundswell of angling opinion in favour of rescinding pike conservation measures and resuming widespread pike culls... which there is not. Scientists and anglers in many other countries, notably in some other western European nations and in North America, share this more enlightened attitude to pike.

12. Results of Pike Culling

By far the most exhaustive scientific work in Britain has been that conducted by the Freshwater Biological Association and the Centre for Ecology and Hydrology at Lake Windermere where pike have been removed

since the 1940s. The results are very complex, but for the purposes of this publication can be summarised, thus:

- There was an *initial* drop in the *numbers* of pike but these then remained relatively stable for a number of years.
- The average size of the pike has fallen.
- The total tonnage of pike has increased.
- Their speed of growth has increased.

Studies on the effect of pike removal on a Swedish lake were published by Otto (1979), who identified three defined stages which occurred as a result of this removal:

1. A brief initial phase in which the proportion of large pike increased, due to the high susceptibility of small pike to capture or to an increase in growth rate of the remaining pike.

2. A phase in which the number of small fish increased in number, due to reduced cannibalism and/or increased intraspecific (i.e. pike-on-pike) competition.

3. A phase in which small and large pike numbers do not change.

It is worth reporting that the biomass (total weight of all pike present within a fishery) did not change markedly.

Many of the scientific papers make exactly the same point as Winifred Frost and her co-workers have made in their studies of Lake Windermere pike - remove the smaller number of big pike and the result is increased numbers of small pike, increased total tonnage of predators and therefore increased predation. The Pike Anglers' Club call this type of fishery management *negative* pike management, as in nearly every case like this the result is a bigger problem. *Positive* pike management, however, benefits all parties.

13. Can Culls Be Justified Scientifically?

The consequences of pike culling exercises have been reported by several authors, including Otto (1979), Bouquet (1979) and Kipling (1983), and they are widely recognised by fishery managers. After an initial decline in the number and overall biomass of pike, there is often a rapid recovery in the size of the population as a result of successful spawning and improved rates of survival of small pike. Where culls occur every few years, the net result may well be that the pike biomass recovers to its pre-culling status, although this often consists of more but smaller pike (e.g. Kipling & Frost 1970).

Kell (1985) reported the impact of pike and zander culling on the Middle Level drainage system in East Anglia, where the pike standing crop of 5.0kg/ha at the end of culling (1981) more than quadrupled, to 21.6kg/ha - its approximate pre-cull status - by 1983... just two years after culling ceased.

Selective culling of the smaller fish appears to be more successful. If large pike are retained in situ, they are able to prey on and control the numbers of their smaller brethren (Popova 1978). Other authors have reported the density-dependent regulation of pike populations through cannibalism. For example, Grimm (1981) confirmed that the biomass of small pike, especially 0+ fish, depended on (and was inversely related to) the abundance of larger individuals present in shallow Dutch fisheries.

On smaller bodies of water where culling is efficient, intense and continuous, it is logical to conclude that pike numbers can be controlled, and the numbers of prey fish may increase - sometimes with adverse consequences on their rates of growth and health. On larger bodies of water, this becomes increasingly difficult and expensive. Many British water-supply reservoirs are stocked with rainbow trout, and those where pike are present have been subject to a variety of culling methods spanning several decades.

Again, improved trout survival rates can be achieved where culling is intense and continuous, but the manpower costs associated with culling can be substantial (Broughton & Fisher 1981). The cost of pike culling measures at Llandegfedd Reservoir were also cited as a major constraint (Welsh Water Authority, unpublished report), and scientists there concluded that it was not feasible to eradicate pike.

Because pike removals are effective only where they are carried out intensively, at considerable cost, trout fishery managers have been forced to rationalise culling activities. Nowadays, it is acknowledged that at least 30 and, perhaps, 70 per cent or more of the pike biomass must be removed annually to prevent the rapid recovery of the pike population to its pre-culling size (NRA, pers. comm.). Latta (1972) estimated that at least 25 per cent of the individual pike had to spawn (and, therefore, had to be present) in order that the pike

population be maintained.

In addition to the costs of such exercises, other drawbacks have become evident. These include an increased incidence of 'poorly-conditioned' trout and a reduction in their rates of growth - noted in Grafham Water by Broughton & Fisher (1981).

The effects on the fish population of the removal of large pike are widely acknowledged by fisheries scientists. In reporting the findings of a highly-controversial cull of pike in the Fenland drains, Kell (1985) concluded that: "A lack of older fish (pike) will lead to increased survival of the younger ones and a recovery of the predator stocks". Mann (1982) argued that the practice of removing large pike, which are heavily cannibalistic on fish of less than two years old, would actually increase losses of young salmon since it is the small pike which are primarily responsible for such predation.

Where culling is not efficient, intense or continuous, the pike population can rapidly re-gain its former biomass at the expense of the average size of the fish (reported by many authors, including Mann 1982 and Kipling 1983).

When summarising the findings of some 20 years investigative research on gravel pit fisheries, Giles (1992) pointed out that: "Practical experience on many waters has shown... that when most large pike are removed from a lake there is an 'explosion' of young pike surviving subsequently."

Moore (1982) questioned the scientific rationale for removing any coarse fish from lowland trout fisheries, concluding that most "... support large coarse fish populations without serious detriment, apart from their 'nuisance value' to anglers who catch them."

The only tenable scientific justification for pike culling is where there is a long-term commitment of resources (manpower and funds) to maintain the exercise. In the real world, there will always be a conflict between the economic (cost) and scientific (effectiveness) arguments.

For culling to be economic, there must be demonstrable cost benefits which exceed culling costs. If there are sound economic reasons for culling, this raises an obvious question: why is such work not being funded at present? It is doubtful that any administration would fail to 'invest' a sum of 'X' into such projects if there was a predictable financial return of 'X + Y' (or 'value added'). Moreover, one would expect studies to have been performed to demonstrate the cost benefits of other means of obtaining angling income. For example, there may be a greater economic benefit from:

i. ceasing pike culls
ii. promoting the conservation of large pike
iii. improving access to the fisheries by pike anglers.

Because the beneficial ecological effects of intense pike culling are temporary, unless culling is conducted ad infinitum, it follows that any benefits will be equally temporary. This begs the question: when funding ceases, how will culling be maintained and who will pay for it?

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Contacting the PAC

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